
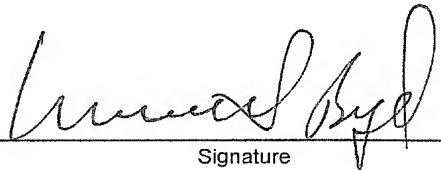


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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 9409-3	
<p>I hereby certify that this correspondence is being transmitted electronically to the U.S. Patent and Trademark Office</p> <p>on <u>July 5, 2007</u></p> <p>Signature <u></u></p> <p>Typed or printed name <u>Susan E. Freedman</u></p>		Application Number 10/661,917	
		Filed 09/11/2003	
		First Named Inventor Robert P. Freese	
		Art Unit 1756	
		Examiner Daborah C. Davis	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"><div style="width: 45%;"><p>I am the</p><p><input type="checkbox"/> applicant/inventor.</p><p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p><p><input type="checkbox"/> attorney or agent of record. Registration number _____</p><p><input checked="" type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 <u>29,614</u></p></div><div style="width: 45%; text-align: center;"> _____ Signature Mitchell S. Bigel _____ Typed or printed name 919-854-1400 _____ Telephone number July 5, 2007 _____ Date</div></div> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p>			
<p><input checked="" type="checkbox"/> *Total of <u>1</u> forms are submitted.</p>			

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**RESPONSE UNDER 37 C.F.R. 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1756**

Attorney Docket No. 9409-3

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Freese et al.

Confirmation No.: 8346

Serial No.: 10/661,917

Examiner: Daborah Chacko Davis

Filed: September 11, 2003

Group Art Unit: 1756

For: METHODS FOR MASTERING MICROSTRUCTURES THROUGH A SUBSTRATE
USING NEGATIVE PHOTORESIST

July 5, 2007

Mail Stop AF

Commissioner for Patents

Box 1450

Alexandria, VA 22313-1450

**REASONS IN SUPPORT OF APPLICANT'S
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Sir:

This document is submitted in support of the Pre-Appeal Brief Request for Review filed concurrently with a Notice of Appeal in compliance with 37 C.F.R. 41.31 and with the rules set out in the OG of July 12, 2005 for the New Appeal Brief Conference Pilot Program.

It is not believed that an extension of time and/or any additional fee(s) are required beyond those that may otherwise be provided for in documents accompanying this paper. In the event, however, that an extension of time is necessary to allow consideration of this paper, such an extension is hereby petitioned under 37 C.F.R. §1.136(a). Any additional fees believed to be due in connection with this paper may be charged to our Deposit Account No. 50-0220.

REMARKS

Applicants hereby request a Pre-Appeal Brief Review (hereinafter "Request") of Claims 1, 3-13 and 15-18 that were finally rejected in the Official Action mailed May 3, 2007. Claims 1, 3-10 and 15-18 stand rejected under 35 USC §103(a) over U.S. Patent 4,965,118 to Kodera et al. in view of U.S. Patent 5,620,817 to Hsu et al. and U.S. Patent 6,410,213 to Raguin et al. Claims 11-13 stand rejected under 35 USC §103(a) over the above three references in further view of U.S. Patent 4,087,300 to Adler and U.S. Patent 5,342,737 to Georger, Jr. et al. Applicants respectfully submit that the final Official Action merely alleged that the elements of the independent claims were, independently, known in the prior art. Yet the United States Supreme Court recently held that "...a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR International Co v. Teleflex Inc., et al.*, 550 U.S. 1, 14 (2007). The Supreme Court also noted a corollary principle that when the prior art teaches

away from combining certain known elements, discovery of a successful means of combining them is more likely to be unobvious. *Id.* at 12. One or more elements needed for a *prima facie* rejection under 35 USC § 103(a) is, therefore, simply not present. Therefore, Applicants respectfully request review of the present application by an Appeal Conference prior to the filing of an Appeal Brief. In the interest of brevity, without waiving the right to argue additional grounds should this Request be denied, Applicants will merely point out the Examiner's omissions of one or more essential elements needed for a *prima facie* rejection.

Independent Claim 1 recites:

1. A method of fabricating an array of microlenses comprising:
scanning a radiation beam at varying amplitude through a substrate that is transparent thereto into a negative photoresist layer on the substrate to image the array of microlenses in the negative photoresist layer.

Thus, Independent Claim 1 recites a method of fabricating an array of microlenses comprising five interrelated recitations:

- (1) scanning a radiation beam;
- (2) at varying amplitude;
- (3) through a substrate that is transparent thereto;
- (4) into a negative photoresist layer on the substrate;
- (5) to image the array of microlenses in the negative photoresist layer.

The present application, for example at Page 20, line 13-Page 21, line 12, describes various potential advantages in fabricating an array of microlenses using the five interrelated recitations. Applicants will now show that the combination of Kodera et al., Hsu et al. and Raguin et al. does not describe or suggest many of the recitations of independent Claim 1.

In particular, Kodera et al. does not describe or suggest (1) scanning a radiation beam, (2) at varying amplitude as recited in Claim 1. Rather, as noted in Kodera et al. Column 6, line 21-41:

1.2 Manufacturing method

Most suitable material constituting respective components will be described while explaining a method of manufacturing the disk 100. First, as shown in FIG. 2, a resin mold 130, on which an uneven pattern 131 having an opposite relationship with respect to the uneven pattern corresponding to information to be recorded is formed, is prepared. A resin liquid 140 of the ultraviolet ray hardening type or the electron ray hardening type is painted on the resin mold 130. From the side of the resin liquid 140, ultraviolet rays or electron rays 150 are irradiated, thus to harden and give form to the resin liquid 140. The hardened resin layer serves as the resin layer 110. After this, the resin layer 110 is disconnected from the resin mold 130. When needed, ultraviolet rays or electron rays are irradiated for the second time to complete hardening of the resin. Since the resin thus hardened is subjected to three-dimensional bridging hardening, it exhibits a high heat resistance property and high solvent resistance property. (Emphasis added.)

Accordingly, in Kodera et al., there is no need to scan a radiation beam at a varying amplitude, because Kodera et al.'s flexible optical information recording medium is patterned by molding a resin onto a substrate having a pattern on it, as shown, for example, in Kodera et al. Figures 1, 2, 4A and 4B. Rather than scanning, flooding of radiation is used to simply harden the molded resin, as noted in Kodera et al. Column 8, lines 33-43:

First, as shown in FIG. 5, the above-mentioned liquid **140** of the ultraviolet ray hardening type or electron ray hardening type is painted on the uneven surface of the resin mold 130, and the surface of the resin liquid **140** is coated with the transparent supporting layer **210**, thereafter to irradiate ultraviolet rays or electron rays **150** while pressure-welding the supporting layer **210** and the resin mold **130** by means of a roller **220**, etc. under pressure of more than 0.1 Kg/cm², desirably more than 1 Kg/cm² according to need. (Emphasis added.)

The flooding arrows **150** of Kodera et al. Figure 2 and Figure 5 confirm that the scanning is not used and, in fact, there would be no need for scanning in Kodera et al. for the reasons described above.

At the top of Page 4, the final Official Action concedes:

The difference between the claims and Kodera is that Kodera does not disclose that the radiation beam amplitude is varied (claims 10, 27, and 42).

Applicants have shown above that Kodera et al. fails to disclose far more than varying the amplitude of radiation beam, and that the Kodera et al. does not describe or suggest (1) scanning a radiation beam (2) at varying amplitude. Moreover, Kodera et al.'s radiation does not (5) image the array of microlenses as recited in Claim 1. Rather, the radiation beam is merely used to harden the resin layer, but the array of microstructures is already formed mechanically by molding onto a patterned supporting layer.

In fact, Kodera et al. does not even appear to use photoresist, because Kodera et al.'s "resin liquid" does not appear to be capable of producing an image-wise pattern, and is not subjected to a development process. Rather, the resin liquid is simply hardened by irradiation of ultraviolet rays or electron rays, as described in the above-quoted passages of Kodera et al. Accordingly, Kodera et al. would appear to be incapable of imaging an array of microlenses, even if a radiation beam was scanned at varying amplitude.

In an attempt to supply the missing teachings, the final Official Action cites Hsu et al. However, like Kodera et al., Hsu et al. does not describe or suggest (1) scanning a radiation beam, (2) at varying amplitude, (5) to image the array of microlenses, as recited in Claim 1. Rather, in Hsu et al., a floodlight is used to expose a photoresist, but the patterning is performed using a phase shift mask, as noted at Hsu et al. Column 3, lines 14-35:

As shown in FIG. 2, a layer of negative photoresist **14** with a thickness of between about 0.5 and 3 micrometers is then formed on the first surface **51** of the transparent substrate **10** covering the patterned layer of attenuating phase shifting material **12**. Light **16** from an ultra violet flood light, having a wavelength between about 150 and 300 nanometers, is then used to illuminate the second surface **52** of the transparent substrate **10**. The light **16** passes through the

transparent substrate **10** and exposes those regions of the negative photoresist **14** which are directly above the regions **22** of the transparent substrate **10** having no attenuating phase shifting material **12**. The intensity and exposure time of the light are adjusted so that the attenuating phase shifting material **12** blocks the light **16** from exposing those regions of the negative photoresist **14** which are above the regions of attenuating phase shifting material **12**. The light at the pattern edges **53** of the patterned layer of phase shifting material **12** diffuses so that the line **54** between the exposed and unexposed regions of negative photoresist is not perpendicular to the first surface **51** of the transparent substrate **10** but increasingly extends over the attenuating phase shifting material as the distance above the first surface **51** of the transparent substrate **10** increases. (Emphasis added.)

In particular, the above passage makes it clear, at the first underlined portion, that an ultra violet flood light is used, rather than scanning. Moreover, the second underlined passage above makes it clear that a phase shifting mask used to image rather than scanning a radiation beam at varying amplitude. Finally, the third underlined passage above states that intensity and exposure time of the flood light are adjusted. However, the above-quoted passage clearly does not describe or suggest (1) scanning a radiation beam, (2) at varying amplitude, (5) to image the array of microlenses, as recited in Claim 5.

The final Official Action concedes at the top of Page 4 that:

The difference between the claims and Kodera in view of Hsu is that Kodera in view of Hsu does not disclose that the optical microstructures formed are an array of microlenses and that the microstructure master is a microlens array master.

Applicants have shown above that Kodera et al. in view of Hsu et al. fails to disclose much more than this. Nonetheless, in an attempt to supply the missing teachings, the final Official Action cites Raguin et al. However, Raguin et al. clearly describes the use of positive photoresist, and clearly illustrates at Figure 8 that imaging through the substrate does not take place. Moreover, Raguin et al. describes at Figures 8(a) and 8(b) the imaging through a mask **84**.

In summary, the final Official Action appears to erroneously interpret the references. In particular, neither Kodera et al. nor Hsu et al. provides scanning of a radiation beam at varying amplitude. Rather, these references both provide flooding and use mechanical molding or masking techniques to form various microstructures. Light is merely used to flood the layer to enable it to be hardened and cured. Any intensity variation in Hsu et al. is an adjustment of the flooding intensity, so as to control the amount of exposure. Accordingly, the primary and secondary references both teach away from combining certain known elements, so that discovery of a successful means of combining them by Applicants is more likely to be unobvious, as recently held by the U.S. Supreme Court. Moreover, although Raguin et al. illustrates forming an array of microlenses, Raguin et al. does not appear to provide any exposure through the substrate by scanning a radiation beam at varying amplitudes through a substrate into a negative photoresist layer on the substrate.

In conclusion, Applicants have discovered a unique method of fabricating an array of microlenses that comprises:

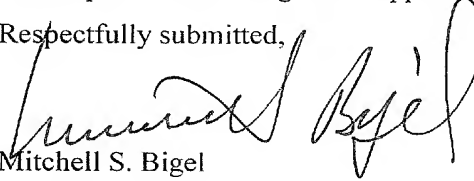
- (1) scanning a radiation beam;
- (2) at varying amplitude;
- (3) through a substrate that is transparent thereto;
- (4) into a negative photoresist layer on the substrate;
- (5) to image the array of microlenses in the negative photoresist layer.

The claimed invention can provide unique advantages, as was described throughout the specification. The rejection appears to misinterpret Kodera et al. and Hsu et al., and appears to selectively pick and choose various features from different patents in an unsuccessful attempt to reconstruct the claimed invention. Stated differently, the rejection attempts to show that the various elements of the claims were, independently, known in the prior art. Yet, the U.S. Supreme Court recently held that a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *Id.* at 14. For at least these reasons, Applicants respectfully request withdrawal of the rejection of independent Claim 1.

Finally, Applicants provided extensive argument why many of the dependent claims are separately patentable. Should the Pre-Appeal Brief Review not find Claim 1 to be patentable, Applicants respectfully request the Pre-Appeal Brief Review to consider Applicants remarks at Pages 9-10 of Applicants' Amendment After Final Action of May 22, 2007. This analysis will not be repeated for the sake of brevity.

In conclusion, although the Examiner clearly has conducted a thorough examination, the results of the examination appear to be a mere demonstration that each of the elements of the claim was, independently, known in the prior art, without proving that it would be obvious to combine these diverse elements in a manner not contemplated by the cited art, so that one or more elements needed for a *prima facie* rejection under 35 USC § 103(a) are simply not present. Therefore, Applicants respectfully request Pre-Appeal Brief Review of the present application and that the rejections be reversed by the Pre-Appeal Brief Review Panel prior to the filing of an Appeal Brief.

Respectfully submitted,



Mitchell S. Bigel
Registration No. 29,614
Attorney for Applicant

Customer Number 20792
Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428, Raleigh, NC 27627
919-854-1400
919-854-1401 (Fax)

CERTIFICATION OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with § 1.6(a)(4) to the U.S. Patent and Trademark Office on July 5, 2007.



Susan E. Freedman

Date of Signature: July 5, 2007